Contents

Foreword xiii
Organizing Committee and List of Speakers xv

Session I : Molecular aspects of glial development.
Co-chair : M. Sensenbrenner (Strasbourg, France)
G. Moonen (Liège, Belgium)

Chemically defined media for growth and differentiation of CNS glial cells.
J.E. Bottenstein (Texas, U.S.A.) 3

Glial growth factors.
B. Pettmann, G. Labourdette, M. Weibel and M. Sensenbrenner (France) 11

Astrocyte subpopulations and glial precursors in rat cerebellar cell cultures.
G. Levi, V. Gallo, G.P. Wilkin and G. Cohen (London, U.K.) 21

Monoclonal antibodies to the developing cerebellar glial cells.
M.S. Ghandour and G. Gombos (France) 31

Properties of cultures derived from mature, isolated oligodendroglia.
W.T. Norton, M. Farooq, F.C. Chiu and J.E. Bottenstein (U.S.A.) 41

Metabolism of cultured oligodendrocytes : Modulation by cell-substratum interaction.
S. Szuchet (U.S.A.) 49

Posters :

Developmental changes in the glycoproteins of nerve cells in culture as probed with lectins.
J. Chapman and M. Rumsby (U.K.) 59

Cyclic AMP enhances the stability of microtubules in cultured astrocytes.
J. Ciesielski-Treska, J.F. Goetschy, G. Ulrich and D. Aunis (France) 61

Oligodendroglial and astroglial cell clones derived from established cultures of 2-day postnatal rat cerebellum.
P.L. Debbage (West Germany) 63

Stimulation of rat primary mixed brain cell cultures with lipopolysaccharide and lectins.
S.M. Roitt, M.G. Rumsby and A.J. Suckling (U.K.) 65

Microtubule-associated proteins (MAPs) and astrocyte differentiation.
D. Couchie, C. Fages, A.M. Bridoux, B. Rolland, M. Tardy and J. Nunez (France) 67

Session II : Detection and rôle of glial cells specific proteins.
Co-chair : L. Eng (Palo Alto, California - U.S.A.)
A. Lowenthal (Antwerpen, Belgium)

Glial fibrillary acidic protein (GFAP) in human astrocytes.
J. Gheuens, P. Cras, R. Crols, M. Noppe and A. Lowenthal (Belgium) 71

Molecular cloning of cDNA for bovine glial fibrillary acidic protein and specific localization of its mRNA in astroglial cells.
S. Watanabe, T. Kitamura, N. Sueoka (Kyoto - Japan) and Y. Endo (Osaka - Japan) 79

Development of astrocytes : in vivo and in vitro studies.
A.J. Patel (London - U.K.) 87

Glutamine synthetase of the chick brain.
G. Tholey, M.S. Ghandour, S. Bloch, M. Ledig and P. Mandel (Strasbourg - France) 97

Carbonic anhydrase in young and mature cultured rat glial cells.
J.P. Delaunoy, D. Langui, S. Ghandour and M. Sensenbrenner. (Strasbourg - France) 107

Glycolipid markers in glial cells.
N. Baumann, B. Zalc, A. Baron-Van Evercooren, M. Gumpel and C. Jacque (Paris - France) 113

Expression of histocompatibility antigens on the oligodendrocyte surface.
A. Suzumura and D.H. Silberberg (Philadelphia - U.S.A.) 119

Posters :
Monoclonal antibodies directed against oligodendrocytes.
M. Dumas (Berne - Switzerland), S. Szuchet and B.G.W. Arnasson (Chicago - U.S.A.) 129

Immunohistochemical localization of protaglandin D synthetase in oligodendrocytes in the central nervous system of adult rat.
Y. Urade, T. Kaneko, N. Fujimoto, A. Konishi, N. Mizuno and O. Hayaishi (Kyoto - Japan) 131

Synthesis and phosphorylation of myelin basic protein in oligodendrocyte cultures : regulatory events.
T. Vartanian, S.H. Yim, S. Szuchet and G. Dawson (Chicago - U.S.A.) 133

Session III : Neuron-glia molecular relationships.
Co-chair : L. Hertz (Saskatchewan - Canada)
G. Franck (Liège - Belgium)

A. Ion homeostasis :
Mechanisms of K^+ regulation in brain : Passive or active process ?
G. Franck, T. Grisar and G. Moonen (Liège - Belgium) 137

Potassium channels and carriers in glial cell membranes.
W. Walz (Saskatchewan - Canada) 145

Oligodendrocytes control extracellular potassium by active uptake and spatial buffering.
H. Kettenmann (Heidelberg - West Germany) 155

Recent advances in brain (Na^+, K^+)-ATPases.
D. Guillaume, T. Grisar (Liège - Belgium) and A.V. Delgado-Escueta (Los Angeles - U.S.A.) 165

Volume regulation in primary astrocyte cultures.
H. Kimelberg and M.V. Frangakis (New York - U.S.A.) 177

Posters :
Energy-dependent volume regluation in primary cultures astrocytes : relevance to cytotoxic edema.
D. Holtzman, J.E. Olson and R. Sankar (Louisiana - U.S.A.) 187

pH control of K^+ channels in astrocytes.
W. Walz (Saskatchewan - Canada) 191

B. Developmental aspects :

Plasminogen activators in brain development.
I. Selak, B. Rogister, P. Lefebvre, P. Leprince and G. Moonen (Liège - Belgium) 193

Astroglia production of neuronotrophic and neurite-promoting agents.
S. Varon, J.S. Rudge, G.E. Davis, S.D. Skaper and M. Manthorpe (San Diego - U.S.A.) 203

Poster :

Influences of neurons on glial cells development in culture.
D. Langui, J.P. Delaunoy and M. Sensenbrenner (Strasbourg - France) 213

Co-chair : S. Varon (San Diego - U.S.A.)
W.T. Norton (New York - U.S.A.)

C. Metabolism and neurotransmission :

Potassium as a signal in metabolic interactions between neurons and astrocytes.
L. Hertz (Saskatchewan - Canada) 215

Regional heterogeneity of astrocytic transport processes for glutamate and gaba.
A. Schousboe, J. Drejer, E. Meier, O.M. Larsson and I. Schousboe (Copenhagen - Denmark) 225

Heterogeneity among astrocytes, evaluated by biochemical parameters.
E. Hansson, P. Eriksson, M. Nilsson (Göteborg - Sweden), A. Nilsson and A. Sellström (Umeå - Sweden) 235

The role of neurosecretory cells in learning and memory.
V.E. Shashoua (Belmont - U.S.A.) 245

Involvement of oligodendrocytes in amino acid neurotransmitter metabolism.
R. Reynolds and N. Herschkowitz (Bern - Switzerland) 255

Posters :

Presence of calcitonin gene-related peptide in glial cells.
C.W. Cooper, S.A. Borosky, B. Haber (Galveston - U.S.A.) and L. Hertz (Saskatchewan - Canada) 265

Serotonin uptake in primary astrocyte cultures.
H.K. Kimelberg and D.M. Katz (New York - U.S.A.) 267

Receptor-mediated inositol phospholipid hydrolysis in CNS astrocytes.
B. Pearce, M. Cambray-Deakin, C. Morrow and S. Murphy (Milton Keynes - U.K.) 269

Glutamate stimulates the respiratory activity in cultured rat astroglial cells.
A. Peterson (Stockholm - Sweden) 271

Heterogeneity among astrocytes demonstrated by protein synthesis and soluble protein profiles.
L. Rönnbäck and E. Hansson (Göteborg - Sweden) 273

Pituicytes : a promising model system for studying neuronal-glial interactions with a clear physiological background.
F.W. van Leeuwen (Amsterdam - The Netherlands) 275

D. Myelination

Antisera to glycoproteins associated with PNS myelin immunostain neurons in chicken dorsal root ganglia.
F.X. Omlin, E. Philippe, A. Rochat, J-M. Matthieu and

B. Droz (Lausanne - Switzerland) 277

Lipid synthesis in oligodendroglia and putative glioblasts isolated from developing rat brain.
M.J. Brammer (London - U.K.) 287

Phospholipid metabolism in glia cell culture.
B. Witter and H. Debuch (Köln - West Germany) 295

Lipid protein metabolism by Schwann cells in vivo.
R.M. Gould, G. Mattingly and W.D. Spivack (Staten Island - U.S.A.) 303

Regulation of Schwann cell expression of myelin-specific glycoconjugates.
J.F. Poduslo (Rochester - U.S.A.) 311

Posters :
Cellular development and myelin-related membranes in monolayer primary cultures of dissociated brain cells from 14-day-old embryonic mice.
M. Fabre, J. Hummel, M.T. Strosser, K. Langley, A. Ebel, V. Ferret-Sena, L.L. Sarlieve (Strasbourg - France), A. Lowenthal, M. Noppe (Antwerp - Belgium) and L. Bologa (Duarte - U.S.A.) 323

Characterisation of a myelin-like membrane produced by oligodendrocytes in subcultures of rat brain cells.
J. Chapman and M. Rumsby (York - U.K.) 325

Session IV : The biochemical lesions and pharmacology of glia cells.

Co-chair : E. Schoffeniels (Liège - Belgium)
D.B. Tower (Maryland - U.S.A.)
D.M. Woodbury (Salt Lake City - U.S.A.)

Role of glial carbonic anhydrase in focal and generalized tonic-clonic seizures.
D.M. Woodbury, F.L. Engstrom, J.K. McQueen, R.E. Anderson, H.S. White and Y.C. Yen-Chow (Salt Lake City - U.S.A.) 329

Alterations of glial (Na^+, K^+)-ATPases in experimental and human epilepsy.
T. Grisar, D. Guillaume (Liège, Belgium) and A.V. Delgado-Escueta (Los Angeles - U.S.A.) 343

Effects of ammonia in primary astrocyte cultures : Morphological and biochemical considerations.
M.D. Norenberg, L.W. Mozes, L.O.B. Norenberg, and J.B. Gregorios (Miami - U.S.A.) 353

Early metabolic changes in astrocytes in experimental hepatogenic encephalopathy.
J. Albrecht (Warsaw - Poland) 363

Cellular and molecular aspects of glial cells with aging.
A. Vernadakis, N. Sakellaridis, D. Mangoura, D. Davies and K. Parker (Denver - U.S.A.) 371

Glial contribution to experimental allergic encephalomyelitis.
L.F. Eng, M.E. Smith and B. Gerstl (Palo Alto - U.S.A.) 381

Astrocyte response to cerebral ischemia : Ultrastructural and autoradiographic studies.
C.K. Petito, W.A. Pulsinelle, F. Plum (New York - U.S.A.) 389

Astroglia : Receptors and their influence on intracellular processes.
K.D. McCarthy, J. Prime, R. Pollenz, S. Burgess, P. Trimmer, L. Lerea and C. Ingraham. (Chapel Hill-U.S.A.) 395

Benzodiazepine receptors in astrocytes.
A. Bender and L. Hertz (Saskatchewan - U.S.A.) 405

Posters :
Biochemical and ultrastructural study of fructose-1, 6-biphosphatase and glycogen in methionine sulfoximine epileptogenic rodent brain.
T.K. Hevor, P. Delorme and J.C. Beauvillain (Lille - France) 415

Differential infectivity of primary rat brain cell cultures by a virulent semliki forest virus.
C.B. Bruce, J. Chapman and M.G. Rumsby (York - U.K.) 417

Characterization of adult human glial cells in vitro.
J. Newcombe and M.L. Cuzner (London - U.K.) 419

Subject index 421